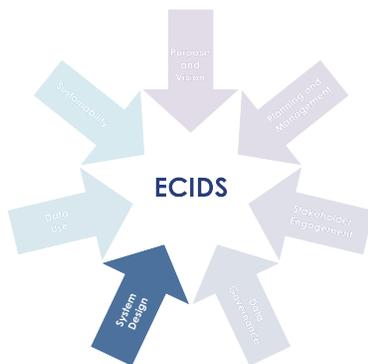


Component E: System Design



The following self-assessment covers

Component E: System Design of the *SLDS Early Childhood Integrated Data System Toolkit*.

Self-assessments for the remaining six components are also available, as is a comprehensive assessment covering all seven components of the Toolkit. The self-assessments, ECIDS Guide, and a glossary of terms are available at <https://slds.grads360.org/#program/ecids-toolkit>.

State Instructions

To conduct the self-assessment:

- (1) Determine the appropriate team to respond to the self-assessment. This team usually includes the ECIDS Core team and any P-20W+ partners.
- (2) Gather the identified team to respond to the self-assessment.
- (3) Review indicators and elements of quality relevant for the state effort. For additional information about an indicator or element, please refer to the *SLDS Early Childhood Integrated Data System Guide*.
- (4) Gather the relevant state evidence of work done for each element of quality. Space is provided after each element to summarize, include a hyperlink, or attach files to document this evidence.¹
- (5) Based on the evidence, determine the state's current progress toward each element of quality. Worksheets included at the end of the Self-Assessment can be completed at the indicator level or the element level. Select the appropriate category for each indicator or element using the following scale:

Not Planned:	N	The state is currently not planning this capability.
Envisioned:	E	The state intends to include this capacity but does not have a documented plan or funding source to implement it at this time.
Planned:	P	The state intends to include this capability and has a documented plan and funding source to implement it, but implementation work has not begun.
In Progress:	I	The state is currently building or implementing this capability but it is not yet fully operational.
Operational:	O	This capability is fully functional and available for use by its intended stakeholders.

- (6) For further assistance, states can reach out to the State Support Team (SST) by emailing tony.ruggiero@sst-slds.org.

¹ Adobe Acrobat users can attach files in the spaces indicated in this PDF using the Attach File tool accessible under the Comment menu.



COMPONENT E: SYSTEM DESIGN

The purpose of system design is to create a technical solution that satisfies the functional requirements and aligns with the overarching purpose and vision for the system. It is the process of defining the technical architecture, components, modules, interfaces, and data for a system to fulfill specified requirements. This includes the implementation and ongoing maintenance of the system.

System design is essential to an ECIDS because it is the means by which the operational needs of the data contributors and data users are translated into a technical infrastructure that will meet those needs. Given the complexity and changing nature of the early childhood sector, the ECIDS system design must be flexible enough to cross and expand into additional domains, but fixed enough to achieve stakeholder requirements.

This section addresses the most critical and common elements involved in designing an ECIDS: design requirements, data models (e.g., federated or centralized), documentation, unique identifiers, privacy and access controls, and procurement process.

Key Indicator 1: The established ECIDS design meets the requirements aligned with the state's long-term purpose and vision

Elements of Quality

- a. **The ECIDS Core Team and ECIDS Technical Team have a well-defined plan outlining the methods by which business requirements are established to ensure that the state's purpose and vision are being met.**

State evidence and discussion:

Attach documentation (optional):



- b. **The ECIDS Lead ensures ECIDS committees and governing bodies have included representation from both the technical group and program staff to ensure maintenance of communication and information throughout the lifecycle of the ECIDS.**

State evidence and discussion:

Attach documentation (optional):

- c. **The ECIDS Core Team has published and shared communications about the system design in accessible language with everyone who needs to be aware of plans, decisions, or changes throughout the lifecycle of the project.**

State evidence and discussion:

Attach documentation (optional):

- d. **The ECIDS Technical Team has created business requirements.**

State evidence and discussion:

Attach documentation (optional):



- e. **The ECIDS Core Team has prioritized the requirements, including phased development.**

State evidence and discussion:

Attach documentation (optional):

- f. **The ECIDS Core Team has documented clear evidence of a strategy for periodic review of both process and system design to ensure that the state’s long-term purpose and vision are being met continuously.**

State evidence and discussion:

Attach documentation (optional):

Key Indicator 2: The system design reflects the current and continued needs for the ECIDS

Elements of Quality

- a. **The ECIDS Technical Team selected a system design that can best address the system requirements as identified by the purpose and vision for the ECIDS.**

State evidence and discussion:

Attach documentation (optional):



- b. **The ECIDS Technical Team has reviewed specific programs data retention policies and considers possible solutions for accessing data that may be required for any longitudinal systems.**

State evidence and discussion:

Attach documentation (optional):

- c. **The ECIDS Core Team has conducted an inventory of relevant data elements from each contributing system to ensure accurate data mapping and common language.**

State evidence and discussion:

Attach documentation (optional):



Key Indicator 3: The ECIDS design is articulated in a way that stakeholders, researchers, or any other nontechnical (i.e., program) team members can clearly understand the system design and its implications

Elements of Quality

- a. **The ECIDS Core Team has created a system design diagram for general presentation and an elevator speech enabling team members to articulate the ECIDS design to any audience.**

State evidence and discussion:

Attach documentation (optional):

- b. **The ECIDS Technical Team has created a conceptual design diagram that is shared with stakeholders. The diagram shows where the data are coming from, who owns the data, and the original source systems.**

State evidence and discussion:

Attach documentation (optional):



- c. **The ECIDS Technical Team has defined any systems and subsystems architecture and provided a detailed list of system hardware, including diagrams.**

State evidence and discussion:

Attach documentation (optional):

- d. **The ECIDS Technical Team has documentation that includes a description of any file and database design related to the ECIDS data dictionary, database management systems, data stores, or other system tools.**

State evidence and discussion:

Attach documentation (optional):

- e. **The ECIDS Technical Team and ECIDS Core Team have documented all output layout, including what users can expect in the form of reports, dashboards, query results, and other features.**

State evidence and discussion:

Attach documentation (optional):



- f. **The ECIDS Technical Team has created a process to review and revise documentation as the system is further enhanced and to communicate changes to stakeholders.**

State evidence and discussion:

Attach documentation (optional):

Key Indicator 4: There is a unique identifier(s) (UID) or established matching process to ensure an accurate, unduplicated count of children, staff, and programs across the state

Elements of Quality

- a. **The ECIDS Technical Team has reviewed and documented any current programs using identifier(s) or a matching process that will be part of the ECIDS.**

State evidence and discussion:

Attach documentation (optional):



- b. **The ECIDS Technical Team and ECIDS data governance groups have agreed on a process to create unique identifiers for child, staff, center or site, and programs.**

State evidence and discussion:

Attach documentation (optional):

- c. **The ECIDS data governance groups and ECIDS Technical Team have identified a process for managing the multiple unique identifiers as they are integrated or created.**

State evidence and discussion:

Attach documentation (optional):

- d. **The ECIDS Technical Team and ECIDS Core Team have worked together to identify a vendor or in-house department to implement and support the UID solution.**

State evidence and discussion:

Attach documentation (optional):



- e. **The ECIDS Technical Team and ECIDS Core Team have considered long-term goals and future needs for UIDs across multiple systems.**

State evidence and discussion:

Attach documentation (optional):

- f. **The ECIDS Technical Team and ECIDS Core Team establish a systems change management process addressing how to integrate future program UIDs into the system.**

State evidence and discussion:

Attach documentation (optional):

Key Indicator 5: There are appropriate access and privacy business rules in place to ensure that all federal and state laws are followed

Elements of Quality

- a. **The ECIDS Technical Team developed the ECIDS business rules within the terms of the executed data sharing agreement.**

State evidence and discussion:

Attach documentation (optional):



- b. The ECIDS Core Team and ECIDS data governance groups have worked with the ECIDS Technical Team to provide the appropriate levels of access for users to utilize the ECIDS.**

State evidence and discussion:

Attach documentation (optional):

- c. The ECIDS Technical Team has established an ECIDS test plan and/or change management process outlining the key security features that need to be tested and maintained in the plan.**

State evidence and discussion:

Attach documentation (optional):

- d. The ECIDS Technical Team and ECIDS Core Team have developed a communication and/or training plan to ensure administrators and operators understand and comply with federal and state confidentiality laws and program policies.**

State evidence and discussion:

Attach documentation (optional):



- e. **The ECIDS Technical Team implements the exchange of data among the participating agencies and programs according to executed data sharing agreement(s).**

State evidence and discussion:

Attach documentation (optional):

- f. **The ECIDS Core Team reviews and ensures compliance with program policies and all applicable laws.**

State evidence and discussion:

Attach documentation (optional):

Key Indicator 6: There is an established procurement process that has been reviewed and used to develop the ECIDS project plan

Elements of Quality

- a. **The ECIDS Technical Team has evaluated all systems licensing agreements.**

State evidence and discussion:

Attach documentation (optional):



- b. **The ECIDS Technical Team has secured a vendor or decided to develop the ECIDS internally.**

State evidence and discussion:

Attach documentation (optional):

- c. **The ECIDS Core Team ensures that any necessary human resource (e.g., stakeholder, business process owners, etc.) from the program side—either internal or external (e.g., end user)—is available to answer business requirement questions.**

State evidence and discussion:

Attach documentation (optional):



System Design: Alignment to P-20W+

Key Indicator 7: The system design reflects the longitudinal (i.e., linkage to P-20W+) needs identified by the state

Elements of Quality

- a. **The ECIDS Technical Team has shared its data elements with P-20W+ partners to determine commonalities.**

State evidence and discussion:

Attach documentation (optional):

- b. **The ECIDS Technical Team worked with P-20W+ partners design a process to ensure that early childhood data can be linked to other sectors such as K12, postsecondary, and workforce.**

State evidence and discussion:

Attach documentation (optional):



- c. **The ECIDS Technical Team has considered how its technology platform will be compatible with the P-20W+ data system.**

State evidence and discussion:

Attach documentation (optional):

- d. **The ECIDS Technical Team and the ECIDS Core Team understand the process and their role in addressing non-technical challenges (e.g., data sharing agreements delays, etc.) of the P-20W+ system.**

State evidence and discussion:

Attach documentation (optional):

Quick Check:

1. Where has your state made progress in this component?

2. Which elements would you like to make progress on in the future?



3. What do you need to make progress towards aligning early childhood to P-20W+?

4. What TA might you request to accomplish your next steps?



Option 1. Review by Key Indicator

Based on responses to the elements of quality, we assess our work on **Component E: System Design** to be:

	Not Planned	Envisioned	Planned	In Progress	Operational
	The state is currently not planning this capability.	The state intends to include this capacity but does not have a documented plan or funding source to implement it at this time.	The state intends to include this capability and has a documented plan and funding source to implement it, but implementation work has not begun.	The state is currently building or implementing this capability but it is not yet fully operational.	This capability is fully functional and available for use by its intended stakeholders.
Key Indicator	N	E	P	I	O
1. The established ECIDS design meets the requirements aligned with the state's long-term purpose and vision					
2. The system design reflects the current and continued needs for the ECIDS					
3. The ECIDS design is articulated in a way that stakeholders, researchers, or any other nontechnical (i.e., program) team members can clearly understand the system design and its implications					



Key Indicator	Not Planned	Envisioned	Planned	In Progress	Operational
4. There is a unique identifier(s) (UID) or established matching process to ensure an accurate, unduplicated count of children, staff, and programs across the state					
5. There are appropriate access and privacy business rules in place to ensure that all federal and state laws are followed					
6. There is an established procurement process that has been reviewed and used to develop the ECIDS project plan					
7. The system design reflects the longitudinal (i.e., linkage to P-20W+) needs identified by the state					



Option 2. Review by Element of Quality

Based on responses to the elements of quality, we assess our work on **Component E: System Design** to be:

Not Planned	Envisioned	Planned	In Progress	Operational
The state is currently not planning this capability.	The state intends to include this capacity but does not have a documented plan or funding source to implement it at this time.	The state intends to include this capability and has a documented plan and funding source to implement it, but implementation work has not begun.	The state is currently building or implementing this capability but it is not yet fully operational.	This capability is fully functional and available for use by its intended stakeholders.
N	E	P	I	O

Element of Quality	N	E	P	I	O
Key Indicator 1: The established ECIDS design meets the requirements aligned with the state's long-term purpose and vision					
a. The ECIDS Core Team and ECIDS Technical Team have a well-defined plan outlining the methods by which business requirements are established to ensure that the state's purpose and vision are being met.					
b. The ECIDS Lead ensures ECIDS committees and governing bodies have included representation from both the technical group and program staff to ensure maintenance of communication and information throughout the lifecycle of the ECIDS.					
c. The ECIDS Core Team has published and shared communications about the system design in accessible language with everyone who needs to be aware of plans, decisions, or changes throughout the lifecycle of the project.					



Element of Quality	Not Planned	Envisioned	Planned	In Progress	Operational
d. The ECIDS Technical Team has created business requirements.					
e. The ECIDS Core Team has prioritized the requirements, including phased development.					
f. The ECIDS Core Team has documented clear evidence of a strategy for periodic review of both process and system design to ensure that the state's long-term purpose and vision are being met continuously.					
Key Indicator 2: The system design reflects the current and continued needs for the ECIDS					
a. The ECIDS Technical Team selected a system design that can best address the system requirements as identified by the purpose and vision for the ECIDS.					
b. The ECIDS Technical Team has reviewed specific programs data retention policies and considers possible solutions for accessing data that may be required for any longitudinal systems.					
c. The ECIDS Core Team has conducted an inventory of relevant data elements from each contributing system to ensure accurate data mapping and common language.					



Element of Quality	Not Planned	Envisioned	Planned	In Progress	Operational
Key Indicator 3: The ECIDS design is articulated in a way that stakeholders, researchers, or any other nontechnical (i.e., program) team members can clearly understand the system design and its implications					
a. The ECIDS Core Team has created a system design diagram for general presentation and an elevator speech enabling team members to articulate the ECIDS design to any audience.					
b. The ECIDS Technical Team has created a conceptual design diagram that is shared with stakeholders. The diagram shows where the data are coming from, who owns the data, and the original source systems.					
c. The ECIDS Technical Team has defined any systems and subsystems architecture and provided a detailed list of system hardware, including diagrams.					
d. The ECIDS Technical Team has documentation that includes a description of any file and database design related to the ECIDS data dictionary, database management systems, data stores, or other system tools.					
e. The ECIDS Technical Team and ECIDS Core Team have documented all output layout, including what users can expect in the form of reports, dashboards, query results, and other features.					



Element of Quality	Not Planned	Envisioned	Planned	In Progress	Operational
f. The ECIDS Technical Team has created a process to review and revise documentation as the system is further enhanced and to communicate changes to stakeholders.					
Key Indicator 4: There is a unique identifier(s) (UID) or established matching process to ensure an accurate, unduplicated count of children, staff, and programs across the state					
a. The ECIDS Technical Team has reviewed and documented any current programs using identifier(s) or a matching process that will be part of the ECIDS.					
b. The ECIDS Technical Team and ECIDS data governance groups have agreed on a process to create unique identifiers for child, staff, center or site, and programs.					
c. The ECIDS data governance groups and ECIDS Technical Team have identified a process for managing the multiple unique identifiers as they are integrated or created.					
d. The ECIDS Technical Team and ECIDS Core Team have worked together to identify a vendor or in-house department to implement and support the UID solution.					
e. The ECIDS Technical Team and ECIDS Core Team have considered long-term goals and future needs for UIDs across multiple systems.					



Element of Quality	Not Planned	Envisioned	Planned	In Progress	Operational
f. The ECIDS Technical Team and ECIDS Core Team establish a systems change management process addressing how to integrate future program UIDs into the system.					
Key Indicator 5: There are appropriate access and privacy business rules in place to ensure that all federal and state laws are followed					
a. The ECIDS Technical Team developed the ECIDS business rules within the terms of the executed data sharing agreement.					
b. The ECIDS Core Team and ECIDS data governance groups have worked with the ECIDS Technical Team to provide the appropriate levels of access for users to utilize the ECIDS.					
c. The ECIDS Technical Team has established an ECIDS test plan and/or change management process outlining the key security features that need to be tested and maintained in the plan.					
d. The ECIDS Technical Team and ECIDS Core Team have developed a communication and/or training plan to ensure administrators and operators understand and comply with federal and state confidentiality laws and program policies.					



Element of Quality	Not Planned	Envisioned	Planned	In Progress	Operational
e. The ECIDS Technical Team implements the exchange of data among the participating agencies and programs according to executed data sharing agreement(s).					
f. The ECIDS Core Team reviews and ensures compliance with program policies and all applicable laws.					
Key Indicator 6: There is an established procurement process that has been reviewed and used to develop the ECIDS project plan					
a. The ECIDS Technical Team has evaluated all systems licensing agreements.					
b. The ECIDS Technical Team has secured a vendor or decided to develop the ECIDS internally.					
c. The ECIDS Core Team ensures that any necessary human resource (e.g., stakeholder, business process owners, etc.) from the program side—either internal or external (e.g., end user)—is available to answer business requirement questions.					
Key Indicator 7: The system design reflects the longitudinal (i.e., linkage to P-20W+) needs identified by the state					
a. The ECIDS Technical Team has shared its data elements with P-20W+ partners to determine commonalities.					



Element of Quality	Not Planned	Envisioned	Planned	In Progress	Operational
b. The ECIDS Technical Team worked with P-20W+ partners design a process to ensure that early childhood data can be linked to other sectors such as K12, postsecondary, and workforce.					
c. The ECIDS Technical Team has considered how its technology platform will be compatible with the P-20W+ data system.					
d. The ECIDS Technical Team and the ECIDS Core Team understand the process and their role in addressing non-technical challenges (e.g., data sharing agreements delays, etc.) of the P-20W+ system.					

Suggested citation:

Coffey, M., Chatis, C., Sellers, J., and Taylor, R. (2014). *SLDS Early Childhood Integrated Data System Self-Assessment – Component E: System Design*. U.S. Department of Education. Washington, DC: National Center for Education Statistics.